Constructing Identity in Academic Writing: A Case Study on Rhetorical Awareness in Engineering Discourse

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Introduction

The Institute of Electrical and Electronics Engineers, or IEEE, is one of the world's largest professional societies at nearly 500,000 members. Its membership base is comprised of individuals of many technical experience levels, ranging from undergraduate engineering students to world-renowned researchers. As an academic community, the IEEE seeks to foster education and innovation in electrical engineering. It is an informational powerhouse, facilitating professional research collaboration and serving as an international platform for the circulation of technical literature.

There has been a great deal of research investigating the writing, language, and rhetoric of engineering discourse communities such as the IEEE. Past research in this field has focused on identifying the rhetorical and linguistic writing strategies used by engineers of various academic and professional experience levels (Pognar; Luzon; Koutsantoni; Ford; Wolfe). This research has provided an exterior perspective on the function of rhetoric in engineering writing, as well as the rhetorical awareness of both novice and expert engineers during the writing process. Awareness of rhetoric and its function in various textual genres is key to writer efficacy; implementation of certain writing strategies allows a writer to construct a specific identity and communicate successfully within a chosen genre. This is especially applicable to engineering writing, such as the academic papers in IEEE journals.

Research suggests that rhetorically aware engineers who publish academic writing generally adhere to a set of writing and rhetoric practices that have become commonplace in academic prose (Johns; Koutsantoni; Luzon). These practices, compiled by linguist Ann Johns, indicate that advanced academic writers of all disciplines develop well-defined theses and "maintain a guarded stance in their writing" by strategically hedging their claims (e.g. using "safe language" such as *suggest* or *possibly*) (Johns 508). Another distinct rhetorical strategy is the use of first-person pronouns in conjunction with hedging to "construct authorial identities," a technique that requires a "high degree of genre awareness" (Luzon 194).

Applied Linguistics Ph.D. Dimitra Koutsantoni comments on the use of these rhetorical strategies as a means of constructing identity in academic writing: "the rhetorical strategies employed by authors in these scientific genres reflect power symmetries between authors and [critics] and constitute the means by which scientific authors . . . attempt to establish credibility and

membership in the community" (33). English lecturer Maria Luzon cites Koutsantoni's work in her research on the use of first-person pronouns in undergraduate engineering writing, and reasons that "the way writers use personal pronouns to rhetorically construct their authorial identity is influenced by many factors, including writers' variables, such as the writers' linguistic competence and academic literacy (native vs. non-native speakers of English, expert writers/authors published in academic journal vs. students of the discipline) or their cultural background, but also the genre they are writing and the discipline" (Luzon 194).

Although Luzon's data is gathered from EFL (English as a foreign language) engineering students who face more language barriers than the average native-speaking student does, the results of her research are representative of undergraduate engineering writing as a whole: engineering students generally lack the ability to recognize and use basic rhetorical strategies in their writing. Applied Linguistics Ph.D. Elena Poltavtchenko recognizes that this sentiment is widely acknowledged in existing research regarding this topic.

While rhetorical awareness may easily be inferred from an outside perspective, writing professor Jon Leydens seeks to obtain an inside perspective on engineering writing by investigating the rhetorical awareness of engineers with various education levels. His findings show that an engineer's view on (and use of) rhetoric in writing changes vastly as his or her career progresses. Younger and less experienced engineers typically devalue the use of rhetoric and consider themselves writers who "merely convey data," while veteran engineers emphasize the importance of rhetoric in their writing. As Leydens states, "issues of writer identity interrelate with issues of reader and writer roles and the importance of rhetoric" (254). Additional survey data suggests that engineering students view writing tasks as "black and white," similar to the math problems they encounter in most of their coursework (Ford 39). This is consistent with Leydens' findings on insider perspectives.

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The insider and outsider perspective studies discussed thus far have presented unique methods for evaluating rhetorical awareness within engineering discourse. They have also demonstrated the rhetorical strategies that might be observed in an engineer's writing based on his or her rhetorical awareness and perceived identity as a writer. Despite researchers' communal desire to further understand the awareness and use of rhetoric in engineering discourse communities such as the IEEE, few attempts have been made to implement multiple research perspectives in a single study as a means of gleaning new insight into this subject. The goal of this paper is to evaluate the rhetorical awareness of graduate engineering students by combining both inside and outside perspectives to determine if the identity they construct in their writing is consistent with their perceived identity as a writer. Leydens notes that "it is vital for a complete portrait that studies of insider perspectives be pitted against actual insider activities, tools, practices, and texts" (259). To effectively address this research concern, this paper presents a case study on the rhetorical awareness and writing strategies of two electrical engineering graduate students within the academic research paper genre as conventionalized by the IEEE. The purpose of this research is to contribute to an understanding of how graduate academic writers in the engineering community use rhetorical strategies, such as hedging and personal pronouns, to construct identity in their writing.

Methods

Data Collection

Research for this study was conducted over the course of four months as part of an ongoing investigation on general engineering discourse. As stated in the introduction, the data presented in this study concerns academic research papers written by graduate-level engineering students. This writer demographic was purposely selected because it is neutrally seated on the rhetorical awareness spectrum; although graduate level engineers can all adhere to the rhetorical conventions of the research paper genre, they still might express differing perspectives on the use of rhetoric in engineering discourse (Leydens). The methods of this study are suited to identify these discrepancies.

To begin data collection for this genre-specific case study, I interviewed two Electrical Engineering Ph.D. students, George and Sofia[1], at the University of Central Florida. I retrieved one of George's published research papers from IEEE's online library. Sofia supplied a research paper that she recently completed in preparation for an IEEE conference. Both students' mentors are listed on their respective papers as co-authors, although I will refer to the students as the sole authors of their papers as they are the primary contributors during the writing process. To consider Luzon's findings that EFL engineering students inherently misuse rhetorical writing strategies due to cultural language differences, I selected Sofia because she is an EFL student, while George is a native English speaker. Interviews were conducted in UCF electrical engineering laboratories and notes were recorded on paper during conversation. I asked the respondents a series of questions (see Appendix A) that led into a general conversation regarding the discourse of academic research papers. The responses I received from these questions allowed me to gauge where each respondent positioned their role as a writer within the discourse. This positioning speaks to their view on reader roles as well.

Data Analysis

Analysis of Insider and Outsider Perspectives

To gauge the respondents' true awareness of rhetorical strategies within their writing and draw meaningful conclusions regarding their use of those strategies as a means of constructing authorial identity, I sought to make two main observations from the collected data:

(1) The respondents' verbally implied perceptions on reader and writer roles
(2) The respondents' textually demonstrated perceptions on reader and writer roles

The first observation provides an inside perspective on the writer's rhetorical awareness based on their interview responses, while the second presents an outside perspective obtained through textual analysis. Positioning both perspectives alongside Jon Leydens' "continuum of rhetorical awareness" framework (see Table 1) will help clarify the similarities or differences between respondents' perceived and demonstrated reader/writer roles, and ultimately provide new insight into the ongoing investigation on rhetorical awareness in engineering discourse. Although Leydens' research suggests that both respondents should possess a level of rhetorical awareness that is characteristic of their academic experience level, it was still necessary to verify this assumption before proceeding with further analysis. Interview data was compiled to qualitatively assess where each of the Ph.D. students lie on the spectrum of rhetorical awareness based on their verbally implied perception of reader and writer roles.

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[1] Pseudonyms have been used for both participants.

Characteristics	Stage 1	Stage 2	Stage 3	Stage 4
Importance of Rhetoric in Professional Communication	Denial of the relevance or importance of rhetoric	On the cusp between denial and acknowledgment	Overt acknowledgment of the importance of rhetoric	Like stage 3 but with greater emphasis on rhetoric's import
Role of Writers	Data conveyers	Data conveyers and data guides	Data providers and spokespersons	Data spokespersons and providers
Role of Readers	Data recipients	Data recipients and interpreters	Primarily data interpreters	Primarily data interpreters
Writer Identity	Writer identity is irrelevant; data persuades, so a spokesperson is unnecessary	Writer identity is minimized, seen as novice, yet sometimes writers need to persuade readers	Writer and engineer selves are integrated; workplace exigencies demand a keen awareness of audience and persuasion	Writer and engineer selves are more fully integrated; confident change agents/engineers know how to marshal data to persuade audiences
Career Stage/ Organizational Role	Early undergraduates/perhaps some internship experience	Late undergraduates/internship and/or coop experience	Post-undergraduates/full-time career experience	Post-undergraduates/full-time career and leadership experience
Role of Objectivity	Objectivity is paramount to good science/engineering	Objectivity is important for obtaining valid results	Objectivity is a worthy ideal; also nonobjective factors influence human decisions	Objectivity is a worthy ideal; also nonobjective factors influence human decisions

Table 1: Initial Rhetorical Awareness Continuum. Source: Leydens, "Novice and Insider Perspectives on Academic and Workplace Writing."

To form an outside perspective on each respondent's rhetorical awareness, a textual analysis was performed to detect the use of hedging and personal pronouns within their research papers. As demonstrated in the introduction, the prevalence of these strategies in a writer's work is generally indicative of their perception on reader and writer roles—this will be discussed further in the following section. Respondents will be placed on Leydens' scale of rhetorical awareness, again, based on their textually demonstrated perspectives on reader and writer roles. Once both perspectives have been presented, they will be checked for consistency.

Defining Hedges

Although Leydens' rhetorical awareness framework is used to generalize data and draw primary research conclusions, the textual analysis in this study relies on a subsidiary set of frameworks to define and detect hedging within respondents' papers. As was briefly mentioned in the introduction, hedging can be described as a writer's use of speculative language to imply the certainty of his or her claims. Past research dedicated to the analysis of hedging in academic writing commonly references a list of hedging cues presented in Ken Hyland's *Hedging in Scientific Research Articles* (Koutsantoni; Kilicoglu et. al.). This study also relies heavily on Hyland's work to derive its hedging analysis methodology. Among the various types of hedging discussed by Hyland, two are of primary interest to this study: reader-oriented and writer-oriented.

Writer-oriented hedges seek to "shield the writer from the possible consequences of negatability by limiting personal commitment" (Hyland, *Hedging* 170). These deliberate attempts to diminish identity invariably result in a passive voice and impersonal presentation of critical data or conclusions. Hyland notes that writer-oriented hedges result from a writer's attempts to "enhance their academic credibility by gaining acceptance for the highest level claims they believe they can make for their results" (*Hedging* 170). Thus, a writer's use of these hedges alludes to their understanding that readers not only receive data, but also interpret it. Depending on individual circumstances, this rhetorical awareness can be reasonably categorized as Stage 2 or higher on Leydens' framework (see Table 1), which is defined as a mix between denial and acknowledgement of the importance of rhetoric in professional communication.

Reader-oriented hedges aim to give the writer an active voice and element of personal attribution. Hyland comments that "explicit personal alignment with findings, models and analysis generally conveys a reader-based hedge" (*Hedging* 182). Rather than hiding behind vague language to protect credibility, a writer can confront credibility issues directly by appealing to the reader on an ethical level and acknowledging the certainty of their statements. This type of hedging is frequently used in combination with personal pronouns, and signifies an "interpretive context in which facts do not speak for themselves but require human intervention to decode" (Hyland, *Hedging* 181). A writer who uses reader-based hedges accordingly demonstrates a perception on reader and writer roles that can be placed at Stage 2 (or higher) of Leydens' rhetorical awareness framework (see Table 1). Again, the specific application of hedging further distinguishes a writer's position within the rhetorical awareness spectrum.

Detecting Hedges

The presence of reader and writer-oriented hedges within respondents' writing can be quantified by first identifying any hedging cue words used throughout their papers. Speculative verbs (*would, may, could, might, should, etc.*) and judgmental verbs (*indicate, suggest, propose, predict, assume, etc.*) are among the most frequently used cue words in research articles and therefore serve as primary hedging indicators - although this study ultimately draws upon Hyland's entire work to help identify various hedges. It is important to note that while these types of speculative language might have many semantic applications, hedging only concerns their use in epistemic modality. In other words, the language cues used in this study must be contextual of a writer's direct evaluations, judgments, or claims in order to qualify a potential hedge.

Unlike Koutsantoni's research that references a corpus of 26 texts to generalize hedging use, this case study has intensive focus on a narrow selection of writing. For this reason, I have chosen to analyze both research papers in their entirety. To account for a significant difference in word count between the two papers, this study follows Koutsantoni by presenting hedges in terms of density per line. To ensure that both papers have a similar average line length, they were stripped down to bare text and manipulated into a standard 12 point, two column format. Word counts of 40 random lines were collected from each paper and statistically compared with an unpaired T-test, as shown in Table 2. The results of this test confirm that the average line lengths of both papers are not significantly different and are therefore an acceptable basis for measurement.

	George	Sofia
Mean	7.13	7.55
SD	1.49	1.20
N	40	
P-Value	.1633	
Significantly Different? (*P*<0.05)	No	

Table 2: Statistical Comparison of Words per Line

Findings

After interviewing George and Sofia, I can infer that both of them view their audience as a group of peers who are primarily data recipients. Commenting on the authoritative power of her audience, Sofia explained that "they just try to understand what I write, they are not that strict." George also displayed a laid-back attitude towards the critical authority of his readers; this position seemed to extend to his overall view on the importance of rhetoric in engineering discourse. However, while we discussed the role of objectivity in the writing and research process, he indicated that his evaluation and presentation of data are mostly detached from personal judgment and that he tries to address any uncertainties or doubts in the discussion section. By acknowledging the duality of his writer role within the discourse, he conveys his understanding that writers can serve to speak for their data, although—based our conversation—he did not see this as an important rhetorical role, but rather a necessary convention of the genre.

Sofia also mentioned her preference to maintain a passive voice within the discourse but acknowledged that, as a researcher, she can never make claims regarding the human body that are 100% certain, as every human body is different in both form and function. She noted that this categorical uncertainty should be made known to the reader—this forms the premise of hedging and suggests that she is rhetorically aware of her writer role as more than just a data conveyor. She additionally noted the importance of "knowing who you're writing to." Table 3 summarizes interview observations and categorizes each respondent's rhetorical awareness according to Leydens' framework. My evaluations based on this inside perspective are consistent with where Leydens placed his own respondents who were in similar career/organizational roles as George and Sofia.

Respondent	Reader Role	Writer Role	Importance of Rhetoric	Rhetorical Awareness
George	Data recipient, some interpretation	Data conveyor and guide	Mixed denial and acknowledgement	Stage 2
Sofia	Mainly data recipient, some interpretation	Data provider and spokesperson	Mostly acknowledgement	Stage 3

Table 3: Verbally Demonstrated Rhetorical Awareness

Textual analysis demonstrates that hedging is present in the respondents' writing. Table 4 follows Koutsantoni's format by presenting a quantitative summary of hedging in both research papers.

	George	Sofia
Number of Lines	505	241
Number of Reader-Oriented Hedges	4	0
Density per line	.007	.000
Number of Writer-Oriented Hedges	12	8
Density per line	.023	.033

Table 4: Reader and Writer-Oriented Hedging Densities

This quantified data shows that both papers contain writer-oriented hedges. George's paper has relatively few reader-oriented hedges, and Sofia's has none. From the surface, these results suggest that there is reasonable similarity between the respondents' use of hedging. However, a

sheer quantitative comparison is not sufficient to determine hedges' effect on the discourse, nor is it the most accurate means for evaluating respondents' rhetorical awareness. Therefore, detailing the lexical context of the following hedges will better clarify how they shape the writer's identity:

(1) <u>As we will show</u> shortly, the measurements taken from the fabricated chips are <u>consistent with</u> our findings from the simulation results in section II, <u>proof</u> that a post-deployment trust evaluation framework is a necessity when designing trusted systems for critical infrastructure.

(2) <u>It is apparent</u> that in both figures <u>we cannot differentiate</u> the power-profile of the genuine and Trojan-dormant chips, even though the inserted Trojan is of relatively large size.

(3) <u>As we can find</u> from the figure, when both genuine and Trojan-dormant chips are tested under same operating conditions, the average power consumption of Trojan-dormant chips is fully overlapped with that of genuine chips.

These examples from George's paper show the use of reader-oriented hedges as a means of acknowledging personal involvement in the interpretation and presentation of data. Example (1) portrays the writer as a data guide, while (3) positions the writer as a data spokesperson. This, accordingly positions the reader as both a data recipient and interpreter.

Unlike George, Sofia did not use any reader-oriented hedges. Furthermore, all of her writer-oriented hedges were lexically similar and sought to buffer writer commitment through the attribution of sensory evidence. Several of these hedges are shown below:

(4) <u>It can be seen that</u> there is a high value of absorbed power focused on the edges of the model.

(5) The other important factor that affects the heating process is the nanoparticle concentration, <u>as can be seen</u> from Equation (4).

(6) <u>It can be seen</u> that the particle susceptibility plays an important role in the temperature rise in the tumor, and a significant change in tumor temperature <u>is seen</u> for the range of values of χ'' studied.

(7) <u>It can be noticed</u> that the tumor temperature remains almost the same when the electromagnetic field is applied, however the temperature in the surrounding healthy tissue is increased.

Sofia's selection of hedging strategies results in an overwhelmingly passive tone and minimal writer visibility throughout her paper. To further illustrate the differences in writer visibility between the two papers, Table 5 shows respondents' use of the personal pronoun "we."

	George	Sofia
Number of Lines	505	241
Number of Occurrences	27	3
Density per line	.053	.012

Table 5: Use of the Personal Pronoun "We"

This comparison shows that the first-person pronoun "we" occurs more than four times as often in George's paper than in Sofia's. Even though Sofia's writer-oriented hedges only create minimal writer visibility, they still guide the reader through the data and thus demonstrate a small amount of audience awareness. From this, it is apparent that she views her audience primarily as data recipients, and secondarily as data interpreters. The various discursive effects of both writers' hedges are compiled in Table 6, which presents my evaluation of both respondents' textually demonstrated rhetorical awareness.

Respondent	Reader Role	Writer Role	Importance of Rhetoric	Rhetorical Awareness

George	Mainly data interpreter	Overt personal attribution. Data provider and spokesperson	Mostly acknowledgement. Intentional negotiation of certainty	Stage 3
Sofia	Mainly data recipient, some interpretation	Minimized writer visibility, impersonal presentation of data	Minimal acknowledgement, little negotiation of certainty.	Stage 2

Table 6: Textually Demonstrated Rhetorical Awareness

Discussion

The dual-perspective analysis performed in this study shows that the graduate students' verbally-demonstrated rhetorical awareness was not consistent with the rhetorical awareness they demonstrated within their writing. This conclusion was reached by using interview (verbal) data and textual analysis (textual) data to perform two separate analyses:

(1) The respondents' verbally implied perceptions on reader and writer roles
(2) The respondents' textually demonstrated perceptions on reader and writer roles

These two analysis perspectives were then aligned with Leydens' framework that relates writer perception on reader/writer roles with rhetorical awareness. Table 7 shows this direct comparison.

Respondent	Verbally Demonstrated	Textually Demonstrated
George	Stage 2	Stage 3
Sofia	Stage 3	Stage 2

Table 7: Rhetorical Awareness Comparison

During my interview with George, he seemed to have a very relaxed attitude regarding the importance of rhetoric in academic discourse. While he acknowledged that he uses his writer identity to negotiate certainty in the discussion section of his paper, he explained that this was simply conventional of research papers (which is rhetorical awareness in and of itself), and indicated that he prefers a more objective approach in his writing. Despite his expressed desire to remain impersonal in the direct delivery of his data, he constructed a visible writer identity throughout the body of writing, and used reader-oriented hedges to actively negotiate data interpretation with the reader. Based on the framework created for this study, George shows a higher level of rhetorical awareness (Stage 3) in his writing than in his interview responses.

Although there are countless possible explanations for this discrepancy, George's interview response regarding the negotiation of certainty can be used to reason that the identity he constructs in his writing is actuated by the conventions of the research paper genre. Although he did not demonstrate an "overt acknowledgement of the importance of rhetoric" (Leydens 252), he did indicate that he uses rhetorical strategies to negotiate certainty when the genre requires him to do so. In Hyland's words, "It is important to recognise [sic] that while identities may be socially constructed through language, writers are not free to simply adopt any identities they choose. When we employ the discourses of a community, there is strong pressure to take on the identity of a member of that community" ("Authority and Invisibility" 1094). George's use of rhetorical strategies, specifically reader-oriented hedges, is shown by Johns to be conventional of academic prose, which supports this explanation.

While EFL student Sofia exhibited graduate-level (Stage 3) rhetorical awareness during the interview by acknowledging both (1) her responsibility as a writer to illustrate the categorical uncertainty of her research and (2) the importance of catering her writing to a specific audience, her rhetorical strategies do not manifest the same level of awareness. Her passive voice and impersonal presentation of data do not concretely address the rhetorical concerns she voiced during the interview; rather than attributing methodological uncertainty to the nature of the human body, her hedges only distanced her from procedural data evaluation.

The limited writer visibility in Sofia's paper aligns with Luzon's findings on EFL writing. Citing previous research as well as Hyland's work, Luzon has already concluded that "first-person pronouns are highly problematic for [non-native speakers], who tend to use them for different purposes and with different frequency than native writers" (194). Luzon's research suggests that Sofia's avoidance of personal pronouns could be due to either a personal/cultural belief that first-person is inappropriate in research papers, or a lack of linguistic competence. Based on her expressed preference for passive voice, it seems that the former is more responsible for her low writer visibility than the latter.

It is worth noting that most, if not all, of the hedges identified in Sofia's paper do not meet the explicit epistemic qualities outlined by Hyland (*Hedging*). In his book, Hyland illustrates that the primary meaning of the word "can" denotes root possibility; however, it "occurs with epistemic meaning only in interrogative or negative environments" (*Hedging* 109). While these rhetorical devices might not be considered hedges according to Hyland's work, I have chosen to treat them as such because of their function within the discourse. Similar in modal function to many other popularly recognized hedges, the devices in Sofia's paper allow her to limit the commitment she makes to her claims by using a passive voice. Epistemically, they allow her to defer certainty to the subjective interpretation of sensory information.

Limitations and Implications for Further Research

The motivation for a dual-perspective analysis in this study stems mainly from the limitations of Leydens' research: "participants can tell an interviewer what he or she wants to hear, so it is vital for a complete portrait [of rhetorical awareness] that studies of insider perspectives be pitted against insider activities, tools, practices, and texts" (Leydens 259). To perform this comparison, this study utilizes a hedging analysis framework to evaluate textually demonstrated rhetorical awareness. Applying a different textual analysis framework to the same respondents/texts might yield different evaluations. In this regard, this study is somewhat limited in reliability by its choice of framework, though this will be the case no matter what framework is applied. Additionally, there is no explicit framework available to evaluate rhetorical awareness based on interview responses. Consequently, the interpretation of interview data is subject to non-objective influence, which can be considered another possible limitation.

Commenting on the scope of his own research, Leydens states, "[T]his study focuses on mining engineers, and research on the degree to which these findings are applicable to other engineering disciplines or other disciplines entirely would be valuable" (259). The findings of my research neither confirm nor deny the validity of Leydens' rhetorical awareness framework, but instead offer insight into the applicability of his work to a small demographic of the electrical engineering community. Future research aimed at contributing to Leydens' endeavors in other engineering disciplines can follow the present study by applying his framework to a two-layered analysis directed towards understanding the discrepancies between verbally and textually demonstrated rhetorical awareness.

Finally, I'd like to suggest an expansion on the taxonomy of writer-oriented hedges. In his book on hedging, Hyland draws upon older research to present a group of evidential lexical adverbs whose epistemic function is to convey "how the truth of [a] proposition can be mentally perceived"

(*Hedging* 137). Words such as *evidently, apparently* and *intuitively* achieve this effect with a visible level of conviction. Sofia's hedges (*it can be seen, it can be noticed)* are epistemically similar to the aforementioned adverbs in that they defer certainty to sensory interpretation, but are more passive and show less conviction. It is likely that this idiosyncratic hedging technique emanates from the EFL belief that first person is inappropriate in academic writing. Non-native speakers such as Sofia have presumably adapted their hedges to keep a low writer visibility within their work. The widespread prevalence of these hedging strategies in modern academic writing would indicate the need for an updated taxonomy of hedges to account for the cultural influence EFL writers have had on epistemic modality in the English language.

Works Cited

Ford, Julie Dyke. "Student Perceptions of Communication: Undergraduate Engineers' Views of Writing and Speaking in the Classroom and Workplace." *Journal of STEM Education: Innovations & Research* 7.1/2 (2006): 34-50. *Academic Search Premier*. Web. 7 Nov. 2014.

Hyland, Ken. "Authority and Invisibility: Authorial Identity in Academic Writing (English)." *Journal of Pragmatics* 34.8 (2002): 1091-112. *FRANCIS*. Web. 18 Nov. 2014.

Hyland, Ken. *Hedging in Scientific Research Articles*. Amsterdam: John Benjamins Pub. Co., 1998. Print.

Johns, Ann M. "Discourse Communities and Communities of Practice: Membership, Conflict, and Diversity." *Text, Role, and Context: Developing Academic Literacies*. Cambridge: Cambridge UP, 1997. 51-70. Rpt. in *Writing About Writing: A College Reader*. Ed. Elizabeth Wardle and Doug Downs. Boston: Bedford-St. Martins, 2011. 498-518. Print.

Kilicoglu, Halil, and Sabine Bergler. "Recognizing Speculative Language in Biomedical Research Articles: A Linguistically Motivated Perspective." *BMC Bioinformatics* 9 (2008): 1-10. *Academic Search Premier*. Web. 8 Nov. 2014.

Koutsantoni, Dimitra. "Rhetorical Strategies in Engineering Research Articles and Research Theses: Advanced Academic Literacy and Relations of Power." *Journal of English for Academic Purposes* 5.1 (2006): 19-36. *ERIC*. Web. 5 Nov. 2014.

Leydens, Jon A. "Novice and Insider Perspective on Academic and Workplace Writing: Toward a Continuum of Rhetorical Awareness." *IEEE Transactions on Professional Communication* 51.3 (2008): 242-63. *Academic OneFile*. Web. 22 Oct. 2014.

Luzon, Maria Jose. "The Use of 'We' in a Learner Corpus of Reports Written By EFL Engineering Students." *Journal of English for Academic Purposes* 8.3 (2009): 192-206. *ERIC*. Web. 7 Nov. 2014.

Pogner, Karl-Heinz. "Writing and Interacting in the Discourse Community of Engineering." *Journal of Pragmatics* 35.6 (2003): 855-67. *PsycINFO*. Web. 23 Oct. 2014.

Poltavtchenko, Elena. "Engineering Design Reports in Upper-Division Undergraduate Engineering Courses and in the Workplace." *Dissertation Abstracts International* 74.9 (2014): n. pag. *MLA International Bibliography*. Web. 7 Nov. 2014.

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Appendix A: Interview Questions

(1) As a writer, do you believe you can influence the way your reader interprets the data in your study? If so, how?
(2) Have you ever strategically presented your data in order to influence your reader's interpretation of information?
(3) Do you prefer to keep a passive voice in your writing, or do you believe in actively engaging the reader?
(4) In your opinion, how does your writing affect the engineering (IEEE) community?
(5) Do you view your audience as peers or as superiors?
(6) Does your writing meet any reader criticism upon publication?
(7) If so, how do you deal with this criticism? Do you have ways to guard your credibility from negative feedback?
(8) How important is it to demonstrate authority or credibility in your writing?
(9) How do you demonstrate authority/credibility in your writing?